Frankly Speaking

Conserve for Victory

Traffic Engineering can make a major contribution to the war effort by assisting War Production Transportation. The issue is not what but how much can be accomplished with the available money, equipment, and personnel. This will be determined primarily by attitude, method of approach, and willingness to cast aside peace time operations which do not contribute directly to the war effort. If the transition is rapid, a real contribution will be made. The following points are of especial importance:

1. Reduce to a minimum all Traffic Engineering activities not directly connected with the war effort.
2. Apply the savings in time, money, and materials to a special war production transportation plan.
3. Develop a plan for staggering hours. (This is a relatively new "Traffic Engineering" function.)
4. Develop a plan for group riding of workers to conserve tires. (This is a new "Traffic Engineering" function.)
5. Apply regular Traffic Engineering techniques on a highly selective basis to streets and areas carrying the greatest proportion of war workers and materials.

The New Traffic Pattern—The increasing shortage of automobiles, tires, and gasoline will definitely result in decreased traffic volumes and a change in traffic distribution and concentration. Traffic engineers must not wait but must plan now for changes necessitated by such new situations.

Urgency of Application—Rubber on workers' cars is estimated to be wearing out at the rate of 3½ to 5 per cent per month. Transition from the traffic problem to problems of transportation and conservation must be made now before gasoline rationing further complicates the situation.

Leadership in War Transportation—Men who know how to meet present conditions will be drafted to leadership in developing war production transportation plans of states and cities.

The Two-Desk System—For a war transport plan a mere expansion of peacetime traffic engineering activities will not suffice. The regular desk where usual Traffic Engineering operations are developed must be supplemented by a new desk where ample time can be given to the development of the War Transportation Plan.

Maxwell Halsey

Chairman, War Production Traffic Committee

VOLUME XII APRIL, 1942 NUMBER 12

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE FOR EMERGENCY MANAGEMENT
WASHINGTON, D. C.

April 11, 1942.

THE OFFICE OF DEFENSE TRANSPORTATION
JOSEPH B. EASTMAN, Director

Mr. D. Grant Mickle, President,
Institute of Traffic Engineers,
60 John Street,
New York, New York.

Dear Mr. Mickle:

Everywhere throughout the United States methods are being discussed to make effective the measures which I advocated in a statement in February, specifically:

1. Staggering hours for increased efficiency of mass transportation utilization.

2. Improvements in traffic regulations to expedite vehicle flow.

3. Encouraging more efficient use of private automobiles through group riding.

The Office of Defense Transportation is pleased that such a cooperative attitude is being displayed in meeting the critical transportation problem of the present. While all appear to be in agreement as to the objectives to be attained it requires specially trained men to develop and apply the procedures necessary to reach sound conclusions, and recommend the most appropriate specific measures to be undertaken.

I wish, therefore, to commend the Institute of Traffic Engineers and its War Production Transport Committee for making available, in this WAR TRANSPORT ISSUE, specific suggestions as to how these things may be accomplished. I hope that it will be possible for you to give this report the broadest possible circulation.

Sincerely yours,

Joseph B. Eastman
Director

WAR PRODUCTION TRANSPORT

THE present world struggle is primarily a war of production. All-out production effort is dependent in large part upon our ability to move workers and materials into and out of our production plants in an efficient and economic manner.

Our ability to do this has been drastically affected by shortages of critical materials which have made it impossible to obtain needed vehicles of all types. Those now on hand represent practically the total supply which will be available until well after the war ends. And these vehicles cannot be operated freely because of gasoline shortage and the almost complete loss of our rubber supply.

If these handicaps are allowed to impair too greatly our transportation system, the nation's whole production schedule, upon which dependence for victory rests, will be crippled.

To avoid the possibility of transport stagnation or failure, extreme measures for the utmost conservation of our limited facilities must be taken and taken now. To this end, the Honorable Joseph B. Eastman, Director of Defense Transportation, has suggested the following methods for making the greatest possible use of existing facilities:

1. Staggering business, school and working hours, to obtain maximum use of mass transportation equipment.
2. Improving street traffic regulation to make possible the more economic movement of vehicles.
3. Making more efficient use of private automobiles through group riding.

The first two of these objectives are identical with those proposed by the Institute of Traffic Engineers at its meeting in Chicago in October 1941. Conservation of private passenger automobiles, through group riding, was not a part of the original plan because, at that time, there was no imminent suggestion of gasoline or rubber shortages. Now that we are at war with the Axis powers however, our whole traffic program must be revised. For this purpose the War Production Transport Committee of the Institute of Traffic Engineers presents an outline of procedures to be followed during the emergency in coping with the transportation problem as it now exists.

The adoption of the methods here proposed will produce a very large increase in the utility of the nation's transport facilities and should provide a local transportation system reasonably adequate to meet all essential demands for the duration of the war. Staggered hours, for example, when properly applied can more than double the carrying capacity of mass transportation systems without the addition of a single new vehicle; improved traffic regulation will measurably increase the speed of flow on, and capacity of, existing street systems; and group riding in passenger automobiles can make private car tires last three times as long as otherwise, while using only one-third as much gasoline and oil.

WAR PRODUCTION TRANSPORT COMMITTEE
INSTITUTE OF TRAFFIC ENGINEERS

Maxwell N. Halsey, *Chairman*

J. W. A. Bollong
Edward H. Holmes
Guy Kelcey
Merwyn A. Kraft
Burton W. Marsh
Theodore M. Matson
William R. McConochie
Walter F. Rosenwald

Traffic engineers are facing a grave responsibility in the present emergency. One of the most important problems facing the nation, and one in which the engineering profession must play a leading part, is that of how to use most efficiently those transportation vehicles and facilities which we have today and how to devise means to make them last until we can rebuild and expand after the war.

It is encouraging that traffic engineers are alive to this responsibility and are adjusting their program to the immediate objective of winning the war by helping to keep the factory assembly lines fed with workers and materials.

(Signed) G. DONALD KENNEDY, *President*

President, American Association of State Highway Officials
Member, National Highway Traffic Advisory Committee to the War Department

PART I. WHY AND HOW TO STAGGER HOURS[1]

"STAGGERED HOURS" is a term applied to the process of changing the hours of starting and terminating a work shift, or an office or school day, so as to reduce peak movements of individuals. In the past, staggered hours has been considered primarily as a device to reduce street crowding during rush hours. This has been accomplished with excellent results by changing working hours in an area by as little as 15 or 30 minutes. Under the present war production emergency, a staggered working hours program becomes a prime essential to reduce high morning and evening traffic peaks and thus to use more efficiently our street and transportation facilities during present slack periods. This present need for staggered hours is accentuated by the increased travel on street cars and buses resulting from the shortage of rubber and gasoline and the consequent necessity for utilizing more fully all mass transportation vehicles. To use most effectively buses and street cars, now idle during off peak periods, staggered working and school hours are a MUST of the first order. In some instances desired results can be obtained by rather minor changes in hours; in other and more critical areas, drastic changes may be necessary.

In a large industrial organization contributing the major proportion of travel to a mass transportation facility or traffic route, the staggering of hours of various departments or main units may provide the required relief. If the plant, however, is located in an area or on a route containing other industrial establishments, and offices, stores, schools, etc., creating large movement of individuals, it then becomes necessary to consider transportation peaks of the entire area or route and to stagger the hours of such establishments with respect to each

[1] Two informative pamphlets entitled "Staggered Hours" have been issued by the Transportation and Communication Department of the Chamber of Commerce of the United States, Washington, D. C., dated November 1941 and February 1942. Copies may be obtained upon application to the Chamber.

other. In such cases considerable care must be exercised to coordinate the entire staggered hour program of the area.

The following outline of a staggered hours survey relates solely to transit operation. It has been found that transit and traffic peaks in cities occur at approximately the same

senger automobiles it is essential that hours be staggered before group riding plans are fully formulated. If group riding clubs are set up before hours are staggered, the subsequent changes in shift times may disrupt many of the group riding arrangements and so throw the program into public disfavor.

WAR PRODUCTION TRANSPORT COMMITTEE
STAGGERED HOURS SURVEY

Name of Firm .....

Address of Firm .....

Type of Business .....

Shift	Number of Employees	Starting Time	Quitting Time
Office			
No. 1			
No. 2			
No. 3			
Total			

Signed .....

Title .....

Use reverse side or additional sheet for comments or further information

FORM 1

places and at the same times, and that staggering hours to reduce transit peaks will automatically have the same effect on general traffic flow. However, if the problem of congestion is wholly one of motor vehicle traffic, the identical principles here described should be employed, obtaining comparable data for passenger automobile flow as are suggested for transit vehicle and transit passenger flow.

When staggered hours are contemplated in conjunction with the encouragement of group riding in pas-

What information is necessary and how is it obtained?

1. Obtain the number of employees, by time of starting and leaving work, for the offices, stores and factories in the area under consideration. In some cases a representative sample may be taken on a broad enough basis to permit an accurate estimate of the total number of employees starting and stopping work in each 15-minute or 30-minute interval. Similar information should be obtained for the school system, particularly from high and junior high schools to which a large

percentage of the pupils travel by bus.

Frequently it is unnecessary to obtain detailed data regarding hours of work and employment in downtown business areas. If offices generally start and stop work at about the same time, overall data from the Chamber of Commerce giving the starting and stopping times and the number of office workers involved should prove sufficient. Generally retail stores open and close at about the same time and, when this is the case, the Retail Merchants Association can frequently report the number of employees involved.

Individual plant data will, however, be necessary because of the wide variation in starting and stopping times in factories. This information should be obtained from the employers by telephone or personal canvass using Form 1. This form is to be filled out by the employer or the canvasser.

2. When resident location and mode of transportation studies are deemed necessary, a simple questionnaire card such as Form 2, to be filled out by the individual employees, will be adequate. Such a card is more difficult to analyze than Form 1 requiring, in all but the simplest areas, the use of mechanical sorting and tabulating devices.[1]

3. The volume of passenger flow on the transit system should be obtained from the local transit companies, as follows:

(a) Number of transit vehicles in scheduled service on *each route*, in each 10-minute or 15-minute period of the day.

WAR PRODUCTION TRANSPORT COMMITTEE
MODE OF TRANSPORTATION SURVEY

Name of Employee ..... Dept. .....

Home Address ..... Clock No. .....

Transportation Used to Work:

WALK ☐ BUS ☐ STREET CAR ☐

AUTOMOBILE: Passenger ☐ TRAIN ☐

Driver ☐

OTHER (Describe) .....

I am expected to report for work weekdays at ..... A.M. and stop work at ..... P.M.

FORM 2

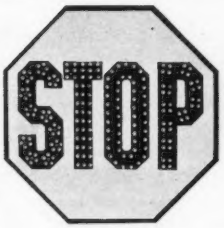
(b) Number of passengers carried on *each route* during each 20-minute period of the day.

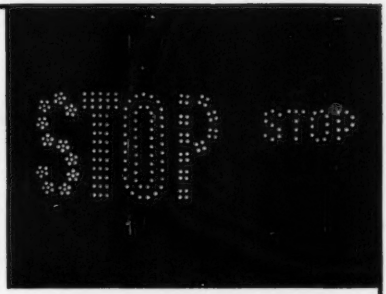
(c) Number of passengers on *each route* at heavy load points by 15-minute periods from 5 A.M. to 8 P.M.

How are the data analyzed and interpreted

1. The number of employees starting and leaving work in each 15- or 30-minute period should be tabulated for each individual employer or plant

[1] When staggered hours and group riding programs are being undertaken together, it is preferable to use forms such as Forms 3 and 4 on p. 343 and 344 which include all of the information necessary for both types of studies.





48" Panel 24" Panel

DAY NIGHT

MEETING the EMERGENCY

Reflector Signs now easily made with "REFLECTO-CHAIN"

FOR BLACKOUTS
Available in luminous finish to reflect *with* light and glow *without* light —a recent foreign development.

"REFLECTO-CHAIN" *is the quick solution to the emergency created by the shortage of steel.* The answer to Defense restrictions. It can be readily applied to metal, however it is even more easily attached to *Wood* or *Plywood.* Flexible as a string. Any size or style of letter, figure or symbol, can be formed and easily mounted by means of its special screws or nails. If required, it can be furnished to function with complete invisibility from overhead, and, without impairing its horizontal effectiveness. Old or new signs, of any size and type, can be quickly and inexpensively converted into Reflector Signs by using "REFLECTO-CHAIN." The treatment can be with single, double or triple rows of buttons, also by designs, (note illustration) and with different reflecting colors. Write for descriptive literature and prices "Reflecto-Chain" and also Reflector Pavement Markers. Send for trial shipment today.

Manufactured under U. S. Patents Numbers 2,240,777; 2,113,759.

in the several industrial and commercial areas in which the city must be divided. These areas should be held to the minimum practicable size, selected with proper regard to the transit routes, so that it will be possible to segregate the routes mainly used in traveling to and from each district. Similar tabulations should be set up for the schools.

When mode of transportation surveys have been made, it is advantageous to segregate the data by type of travel, to enable a close determination of the effect on transit traffic of any changes which are later made in working hours.

Office personnel in plants should be tabulated separately from factory personnnel, as it is customary to set up different starting and closing times for these groups.

The analysis sheets should be divided into 15-minute intervals so that it will be possible to determine, for each area, the total number of persons arriving at and leaving work in each period of the day.

The summary figures from the analysis sheets should be plotted in graph form to enable visual determination of hours of present employment peaks and their relative volumes of employees. Fig. 1 is a type of graph frequently used, proposed changes can also be plotted on this graph.

2. The transit passenger and vehicle flow counts are plotted on graph paper. Fig. 2 is an example of a graph of bus flow, disclosing the peaks and valleys in the curve for two routes. Passenger flow charts are similarly plotted.

In adjusting the hours of work and school, through a staggered hours program, every effort should be made to spread the peaks to the maximum feasible extent and to fill the valleys. This will produce more uniform passenger flow throughout the day and provide the greatest possible benefit from the plan.

Correlation of data on working hours and passenger movements

If the area being studied is a small city or a concentrated area well isolated from other similar areas, the correlation between the number of employees starting and stopping work at any time and the number of people traveling on transit vehicles will be evident. In such cases it is usually sufficient merely to level off the number of workers starting and stopping at any one time into approximately equal groups, with about the same number of persons starting and stopping work in each 15-minute or 30-minute interval. The desirable lengths of the spread, or staggering, will depend upon the extent to which it seems desirable to utilize now unused transit facilities. In making adjustments in working hours, care must be taken that changes to reduce the afternoon peak, for example, do not, at the same time, increase the morning peaks.

When, as is usually the case, the contemplated staggered hours program is of city-wide scope, applicable to factories, offices, stores and schools, more intensive studies are required. In such cases it becomes necessary to consider the effect of changes being made in one area upon the traffic load at some remote point. These points are ascertained from the transit passenger counts at heavy load points referred to above.

Having located these critical points, the transit company should be requested to furnish the travel time between areas of employee concentration by each route to and from such points. To these times must be added, for the morning hours, the time required for passengers to leave the bus or street car and report for work; and, for the evening hours, the average time elapsing between the shift change and the time passengers reach the transit line, making proper allowance for average waiting time.

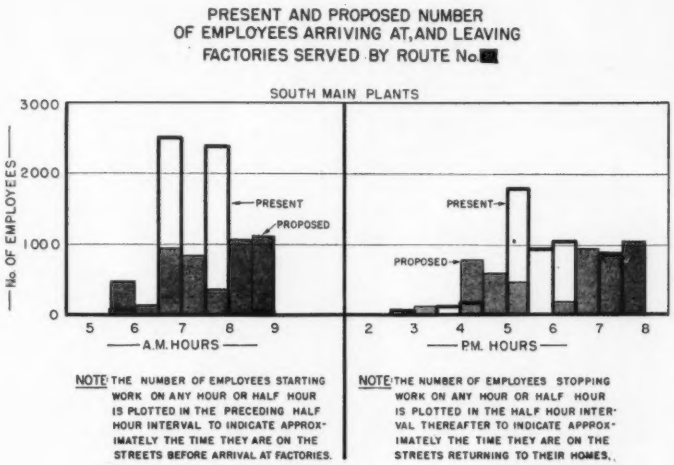

PRESENT AND PROPOSED NUMBER
OF EMPLOYEES ARRIVING AT, AND LEAVING
FACTORIES SERVED BY ROUTE No.■
SOUTH MAIN PLANTS
No. OF EMPLOYEES
3000
2000
1000
0
PRESENT
PROPOSED
5 6 7 8 9
A.M. HOURS
PRESENT
PROPOSED
2 3 4 5 6 7 8
P.M. HOURS
NOTE: THE NUMBER OF EMPLOYEES STARTING WORK ON ANY HOUR OR HALF HOUR IS PLOTTED IN THE PRECEDING HALF HOUR INTERVAL TO INDICATE APPROXIMATELY THE TIME THEY ARE ON THE STREETS BEFORE ARRIVAL AT FACTORIES.
NOTE: THE NUMBER OF EMPLOYEES STOPPING WORK ON ANY HOUR OR HALF HOUR IS PLOTTED IN THE HALF HOUR INTERVAL THEREAFTER TO INDICATE APPROXIMATELY THE TIME THEY ARE ON THE STREETS RETURNING TO THEIR HOMES.

FIG. 1

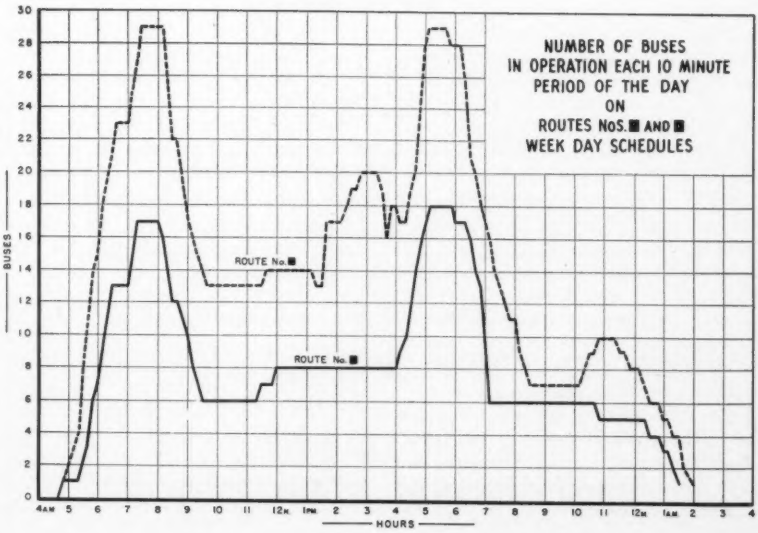

NUMBER OF BUSES
IN OPERATION EACH 10 MINUTE
PERIOD OF THE DAY
ON
ROUTES NOS. ■ AND ■
WEEK DAY SCHEDULES
BUSES
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
ROUTE No. ■
ROUTE No. ■
4 AM 5 6 7 8 9 10 11 12 M. 1 PM 2 3 4 5 6 7 8 9 10 11 12 M. 1 AM 2 3 4
HOURS

FIG. 2

Timely

TRAFFIC SIGNAL BLACKOUT *by* EAGLE

The new EAGLE BLACKOUT CONTROL unit is an accessory to existing installed traffic-control equipment and provides:

1. Complete and effective traffic control under normal and emergency conditions.
2. Normal operation with full efficiency and brilliance.
3. Effective signal over entire surface of standard 8" lens and established sequence during blackout conditions.

—V—

No masks or other makeshift accessories are required on the signal faces.
Will operate with all makes of controllers.
Available for both remote control and isolated operation.
Economically priced.

—V—

The Nation's capitol (Washington, D. C.) have just ordered 500 of these units

EAGLE SIGNAL CORPORATION

Factory and General Office
MOLINE, ILL.

Executive Sales Office
BOSTON, MASS.

Adjustment of working hours

With these data it is now possible to estimate very closely the effect of a change in working hours, at any point, upon the traffic and transit loads at nearby critical control points. It is therefore possible to determine the changes which must be made in working hours to accomplish the desirable objective of spreading the peaks and filling the valleys. If consideration is not given to the relation between travel time from place of employment to control points, it is possible to create a worse situation than previously existed.

The following example will illustrate this point. Assume two plants located two miles apart, each employing 2000 persons. The direction of travel from these two plants to the residential area is the same. One plant stops work at 4:45 P.M. and the other at 5 P.M. Although this appears on the surface to represent a balanced load, this is not the case. If the time of travel from the first plant to the critical point is 20 minutes and from the second plant to the same point is 5 minutes, the employees leaving the two plants will jointly reach this critical point at 5:05 P.M. This will produce a very undesirable peak which can be eliminated by advancing the hours of work in the first plant so that employees stop 15 or 30 minutes earlier, or by closing the second plant 15 or 30 minutes later.

In making changes in working hours it is necessary in all but the simplest cases to consider each transit route a separate study, relating the working hours in the plants and establishments served by such routes to the transit flow curve on those routes. Analysis by individual routes is the only practicable method of determining the most desirable revisions in working schedules.

Effect of adjusted working hours on production

In small plants it is generally desirable to shift all employees in the factory to a new working time, when a shift in the plant area is required. However, where a large number of employees start and stop work simultaneously in a single plant, intraplant staggering is usually necessary. Intraplant staggering means breaking a working shift into two or more groups starting at different times. These groups should be made up on a departmental basis, with various starting and stopping times in different departments. In suggesting such changes it is desirable to confer with plant managers so that resultant changes will not disrupt important war production schedules.

Relation between hours of the groups involved

In establishing a city-wide scheme of staggered hours, undesirable overlaps in the traffic of the various groups; factory, office, store and school, must be avoided. Present starting and stopping times are usually quite similar for a large percentage of the persons involved. It is this concentration in morning and afternoon hours that produces the high morning and afternoon traffic peaks. A proper staggered hours program will assign to these groups such starting and stopping times that, for example, office employees in the downtown district and school pupils will not be traveling at the same time. Similarly, stores should not close at about the same time that offices stop work. The possible range of changes in school hours, store hours and office hours is generally considered to be less than the possible range in industrial plant hours. Usually, the latter will require the most variation from present working hours if the staggered plan is to be as effective as it should.

EFFECT OF STAGGERED HOURS PROGRAM

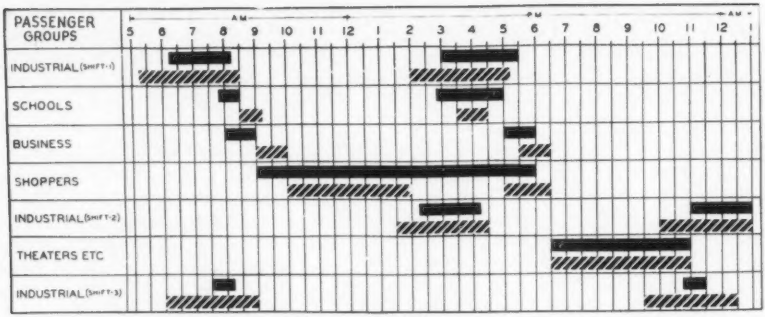


FIG. 3

Fig. 3 is an example of a chart showing how changes in hours have been adjusted to minimize overlap of traffic of different groups.

Keeping the plan in effect

The staggered hours program should spread the hours over a sufficiently broad period to provide a very substantial increase in the carrying capacity of the transit system and a measurable decrease in traffic congestion. However, the first schedule adopted under such a plan may develop imperfections which will require review and adjustment. Furthermore, with increased employment, growing traffic on transit lines, due to shortages of rubber and gasoline, new peaks may be developed that had not been anticipated.

Thus it is important that a continuing committee representative of all of the affected groups in the city be established under local auspices and designated as the official authority to study these problems as they arise. With the establishment of such a group it should be agreed informally that no plant or industrial group will make any material changes in working hours without first referring the matter to the committee for consideration.

After such review, it may be possible to suggest another change which will be equally as acceptable to the employer as the one under contemplation, and will not result in upsetting the program. If the changed hours of work, required by production demands, cannot be avoided, it may be necessary to change the hours of work in other nearby plants to maintain the proper balance.

PART II. CORRECTIVE TRAFFIC ENGINEERING METHODS

IN general, normal traffic control methods can be adapted and applied to assure the most efficient use of streets and highways leading to essential industries. The following questions indicate the factors involved:

1. What are the most efficient routes which can be used for the movement of workers and materials to and from an essential industry?
2. How can these routes be improved further to facilitate essential traffic?
   a. Can non-essential traffic be diverted?

b. Can signals, signs, markings and street lighting be used more effectively?
c. Will channelization be helpful?
d. Can improved traffic regulation provide higher safe speeds?
e. Can new pedestrian protection measures expedite traffic and decrease pedestrian accidents?
f. Are additional parking control measures essential:
On routes leading to industrial plants?
On parking areas used by employees?

To answer these questions and take necessary corrective steps, certain basic data are required. The more important facts needed for this purpose are presented here from the standpoint of an individual war production plant. If the plant is in an area containing other essential plants or is affected by existing or anticipated conditions at other such plants, it will be necessary to relate the pertinent data of the respective plants through a composite or over-all study.

In small communities with but one or two industrial plants or areas a survey of conditions on routes leading to and from these specific areas is probably all that is required. Most cities, however, that are facing a traffic and transport problem due to war production, will find it desirable to undertake a city-wide survey resulting in the development of a comprehensive system of war production routes. The type of data, indicated below, for a single plant should, in a city-wide study be obtained from a sample of all of the employees. A random canvass of ten per cent of employees is adequate for this purpose.

In applying many of the principles referred to herein in general terms, reference to "TRAFFIC ENGINEERING HANDBOOK" is recommended.

Because of the complete index in the HANDBOOK, specific page references are not included in this presentation.

Copies of the HANDBOOK may be obtained from the Institute of Traffic Engineers, 60 John Street, New York City.

The basic data

1. The travel habits of employees to be obtained from questionnaires submitted to all employees[1]
   a. Residence area of employee
   b. Method of reaching plant—walk, bicycle, private car, bus, street car, train or other.
   c. Route followed to work. This is to be indicated on a map of the area furnished to each employee questioned.
2. Trucking movements
   a. Area of origin or delivery of materials, for example main highway leading to area, freight terminal, other plant, warehouse, etc.
   b. Routes now used.
   c. Total number of truck movements over route, per hour, work shift, or day.
   d. Average speed of travel over each route to determine if unwarranted delays are being encountered.
3. Mass Transportation
   a. Routes followed.
   b. Number of unit movements.
   c. Headway of units, especially during critical periods.
   d. Passengers carried to and from essential plant.

Note: For convenience of recording and study, the summarized data obtained under items 1-3, may be plotted on a map of the area feeding traffic to the plant. The map should indicate areas of origin of traffic, types of transportation, routes, and volumes of existing and anticipated essential traffic flow. If the survey covers several plants, or an entire city area, similar data should be obtained from each plant and combined on the map.

Important: Such maps, showing the location of military depots, war production plants, arsenals, ammunition or explosive plants, or military air fields, may *not* be reproduced under recent orders of the Office of Censorship.

[1] These questions are the minimum required for a routing survey. However, as the need for vehicle conservation is so urgent, and travel habits are changing so rapidly, it is suggested that a more comprehensive study, coordinated with a conservation survey be made using forms such as Forms 3 and 4 on pages 343 and 344.

4. Present use of essential routes
   a. Volume of traffic flow to determine approximate volume of non-eessential traffic which may be diverted.
   b. Location and chief causes of delay and congestion of present traffic on essential routes.
   c. Location and number of accidents.
5. Supplemental or diverting routes
   Sufficient data such as traffic volume, points of delay and accidents, condition of surface, etc., should be obtained for all possible alternate routes, to determine their suitability as supplemental routes for essential traffic

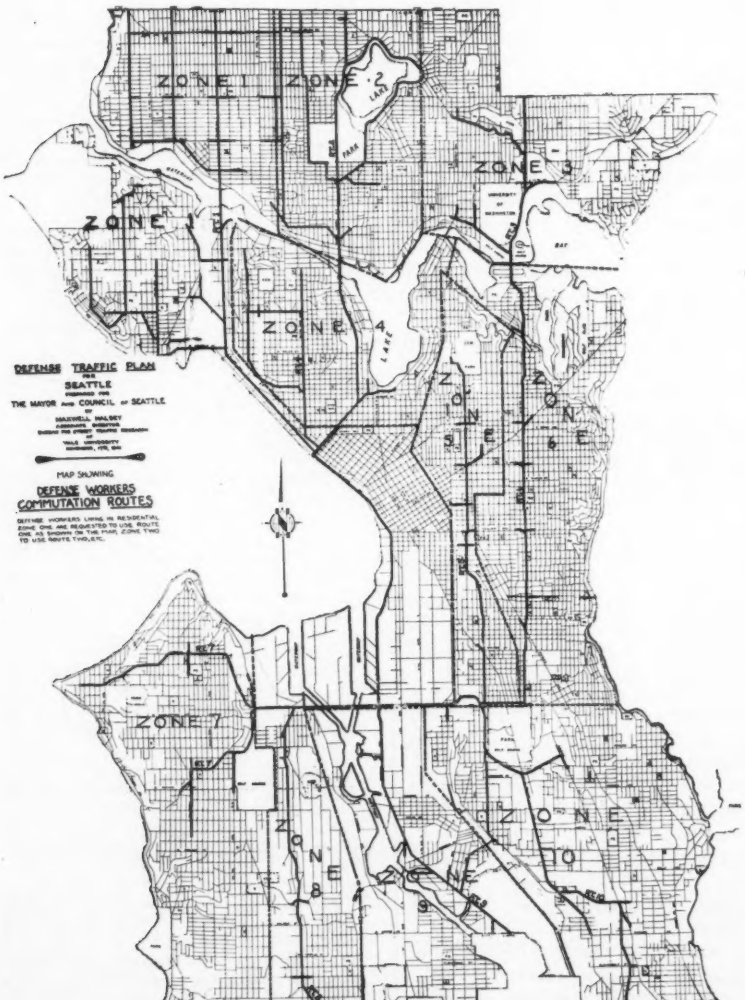


FIG. 4

or as diverting routes for non-essential traffic.

Note: For convenience it may be desirable to plot the data of items 4 and 5 on maps.

Route selection

From a careful study of the basic data it should be possible to determine:

1. Whether present routes are adequate for essential traffic or can be made by diverting non-essential traffic.

FIG. 5

2. What supplemental routes can be used for essential traffic.
3. What routes can be used for diverting non-essential traffic.

In determining the routes for essential and non-essential traffic, advice and consultation should be sought from traffic representatives of local trucking and transportation agencies.

When a plan of war production routes has been established, the streets included in these routes should be given priority in traffic engineering improvements. The widest possible publicity regarding these routes should be given among those of the public who will be affected.

Fig. 4 is a route map of Seattle, and Fig. 5 shows the type of special markers which have been posted to identify the preferred routes.

Improvement of conditions on selected routes

The data collected regarding location and causes of delay and accidents, will indicate where and what corrective steps may be taken to provide a more economic use of essential routes by adapting normal control measures to the respective situations.

These improvements may be brought about by the use of properly selected and applied traffic signals, signs and markings to help facilitate war production transport with safety. Or, they may be accomplished by relatively simple and easily enforced traffic regulations requiring a minimum expenditure of money. The more important measures of these types which should be applied during the emergency are discussed hereafter.

How signals can help

Because of priorities, it is essential that traffic control devices be used only where really needed and that the simplest device—using the least critical materials which will accomplish the desired purpose — be employed. However, in particularly important locations critical materials may be justified to provide sufficiently flexible equipment. Wherever possible, new equipment should not be ordered.[2] Instead, existing devices, non-essential or unwarranted in certain locations, should be transferred to critical points on essential routes. In using control devices attention must also be given to the latest official regulations regarding blackout provisions. There are being regularly issued by the Office of Civilian Defense.

Conditions vary so greatly that no set of suggestions can be prepared

[2] Note Re: Priorities page 340

A lane of beacons promotes safe night driving on the Pennsylvania Turnpike.

NIGHT EYES

for America's Wartime Traffic!

● Highways and streets today have a tremendous job . . . handling the 24-hour-a-day flow of freight and workers . . . vital to all-out production! This calls for the most careful control of *night traffic* . . . a job for which Cataphote Reflector Buttons are unsurpassed! They're "tops" for illuminating danger points! Use Cataphotes everywhere for effective center lane and curb markers, railway outliners, and STOP, SLOW, CURB and similar signs. In blackouts, Cataphote Buttons are not visible to air craft. Send now for full details! Western Cataphote Corporation, Toledo, Ohio.

CATAPHOTE
Reflector Buttons

which will fit all needs. However, the following should prove a useful guide during the emergency.

1. Re-check signal locations and timings, and make needed revisions. Keep the lengths of cycles as short as possible to avoid needless delay and irritation both to motorists and pedestrians.
2. Coordinate independently operated traffic signals which are so close together that the main group of vehicles moving through at one signalized intersection is frequently delayed at the next. The use of synchronous motors is recommended for most such coordination because they require no cable interconnection. Frequent checks must, however, be made to determine whether the GO indications occur in desired time relationship. When necessary the signals should be reset.
3. Coordinate signals where speed control is needed on an important war production route.
4. Provide signal control at entrances to plants and large plant parking lots where such signals will take care of existing or expected serious traffic conditions. War production plants can frequently secure the necessary priority rating.
5. Provide traffic signals of the proper type where intersection tie-ups occur and where study shows that a traffic control signal will correct the situation.
6. Provide additional signal faces, turning arrows, or pedestrian walk indications where their lack would cause confusion, delay or accidents.
7. Shut off unneeded signals when traffic and pedestrian volumes permit.
8. Install time clocks in signal controls where necessary to meet widely different traffic flow requirements at varying times of day.

How signs can help

Various types of signs can help facilitate essential war production traffic. In a few places super-sized signs may be needed because of special conditions. If a sign is important at night because of heavy night travel of war workers, it should have night visibility, either reflectors or self-illumination. A useful guide to sign procedures during the emergency follows:

1. Use special distinctive route signs for war production routes. Fig. 5, page 335 is an example of a suitable sign for this purpose.
2. Place STOP signs on every cross street along Through Traffic Streets on essential routes.
3. Use STOP signs to prevent tie-ups and to correct accident conditions at multiple entrance and complicated intersections where studies show need. Often STOP signs will accomplish as much as signals.
4. Use effectively-positioned ONE-WAY signs to designate one-way streets which will relieve pressure at traffic bottlenecks or will improve a heavy traffic flow pattern. Use ONE-WAY signs to direct traffic within, and while entering and leaving plant parking lots.
5. Install specially designed, highly visible and generally large-sized signs at forks where one street is or is to be a by-pass route and the other an essential route. Indicate clearly on the signs which route to follow for which purpose.
6. Post signs on traffic signals in coordinated systems indicating proper speed for non-stop movement.
7. Post NO PARKING or NO STOPPING OR PARKING signs bearing the hours for which this restricting measure is in effect, at points where important war production streams are seriously affected by curb parking.
8. Remove and salvage for more essential use all unnecessary signs.

How markings can help

The effectiveness of road surface markings under normal conditions is not generally realized. At present, with blackout driving imminent, they are of vital importance. Principles to follow are:

1. Mark lines on approaches to critical intersections to permit the maximum number of lanes of vehicles to approach intersections in an orderly fashion and to pass a signal in the least possible time.
2. Lane-mark critically important arteries throughout their length to secure maximum lane use.
3. Mark center lines on heavy traffic arteries not fully laned; particularly on narrow streets where lane width is restricted.
4. Paint the curbs of channelization islands white and paint white approach lines on road surface to guide approaching traffic.
5. Mark, so as to be effective day and night, important crosswalks where many war production workers cross afoot. Make near-side crosswalk line at least two feet wide to help increase its visibility as a limit line for vehicles.
6. Mark special turning lanes with supplementary road surface wording or other signs where turns are to take place on spe-

cial signal intervals or only from a particular lane.

7. Mark key information on road surface as, for example, where war traffic unfamiliar with streets must pass part way around a traffic circle and choose the proper exit at night.

How street lighting can help

With present or anticipated increases in night work, effective street lighting can help in expediting traffic with safety and warn of danger points. Broad-scale street lighting programs cannot now be undertaken, but critical locations may justify the following steps:

1. Increase the intensity of light on key war production routes used at night if the cost will be warranted by the better traffic effectiveness of the lighting.
2. Install adequate lighting for plant entrances and plant parking lot entrances where night shifts are involved.
3. Light critical intersections, transfer points, locations of troublesome night congestion and hazard, when the facts show necessity.

How channelization can help

Channelization aids efficient roadway use by creating orderly traffic flow. Islands, dividing curbs, stanchions, white lines and other easily obtainable, low cost equipment and materials may be used to limit vehicles and pedestrians to proper channels so that irregular and conflicting movements are avoided. In some instances sand bags have been used, when properly marked, to outline restricted areas. Channelization, even in its most expensive form is not costly; in its simplest form, the investment is negligible.

For the present, special attention should be given to critical intersections, using the following treatments where studies show need:

1. Islands, raised markers, or stanchions, placed in the throats of an ordinary rectangular intersection and at crosswalk lines, will regulate left turns, increase efficiency, aid pedestrians and prevent accidents.
2. Islands and white lines to confine traffic to proper channels through squares and other large traffic areas and at multiple intersections, reduce traffic conflicts and congestion.
3. Pedestrian safety islands at street car stops and other necessary points aid both walkers and drivers.

Fig. 6 shows collision diagrams at a 5-way intersection, before and after simple but extremely effective channelization. After this remedy had been applied, 95% of the traffic passed through intersection without stopping.

How traffic regulations can help

Substantial improvements in the rate of traffic flow can be obtained in the following ways:

1. By prohibiting left turns at critical intersections.
2. By allowing right turns only into the major thoroughfare from unimportant cross-streets.

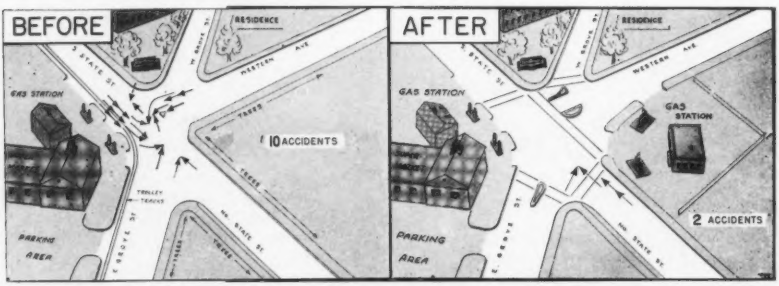


FIG. 6

ELECTRIC SIGNALS

Standard signals adapted for all types of mounting. Synchronous and induction control mechanisms and accessory devices.

REFLECTOR SIGNALS

When signs are not enough or expense is a factor, reflector signals keep down both cost and accident rate.

8"; Six 1⅝" Stimsonites

15"; Six 3" Stimsonites

REFLECTOR SIGNS

Large Stimsonized and standard reflector button signs for all traffic conditions.

72" SIGN
18" LETTERS

24" SIGN
6" LETTERS

DELINEATORS

Reflector Delineation gives essential road information after dark at daylight distances. The alignment and driving limits of the road are outlined by a channel of light.

SIGNAL SERVICE CORPORATION

SS SIGNALS

ELIZABETH, N. J.

3. By judicious establishment of one-way streets to handle heavy directional traffic movements.

On certain routes it may be possible and desirable to use these three measures jointly to produce what is known as limited way operation at grade. Under this plan, no crossing traffic would be allowed except at signalized intersections installed approximately at 10-block intervals. At intermediate points traffic would turn right only into the major thoroughfare. Streets leading to the major thoroughfare, when not signaled, would be made one-way, in the block on either side of the main street, alternating direction so that every other street would feed traffic into the main street while the alternate streets would carry it away. Such a plan should be installed only after thorough engineering study. Unless this is done, complications may be introduced that will more than offset the benefits obtained.

Protecting the pedestrian

At points of heavy pedestrian concentration, particularly in the vicinity of war production plants where large numbers of persons cross important traffic arteries, consideration should be given to the following measures:

1. Construction of temporary pedestrian overpasses.
2. Installation of walk lenses or special pedestrian signals.
3. Rerouting of pedestrian and/or vehicular traffic to avoid conflicts.
4. Improvement of street lighting near war production plants where large numbers of workers are on foot in night hours.

Parking restrictions on essential routes

The efficient flow of traffic on essential routes may be hampered seriously by standing or parked vehicles. Every effort should be made to eliminate this source of congestion. The following suggestions are offered:

1. Prohibit all parking where critical conditions necessitate, either during the entire day or only during rush hours as required by traffic volume.
2. Lay out "No Parking" sections at crosswalks, hydrants, driveways, alleys, opposite street car loading islands and for suitable distances back from intersections.
3. Set aside ample sized loading zones for buses, taxis, trucks and passenger automobiles at needed points.
4. Mark off curb space in adequate parking stalls where parking is permitted.
5. Arrange off-street accommodation in lots or garages for vehicles that can not be parked along curbs. Urge parking lot proprietors, both plant and public, to mark stalls in parking lots, clearly indicating the proper angle and space for parking.
6. Strictly enforce regulations governing curb use and *permit no double stopping or parking anywhere at any time.*

Parking provisions for essential plants

Adequate and efficiently controlled parking facilities for employee vehicles at essential plants is an important factor in the war production transportation problem. The following suggestions are offered:

1. Arrange mass parking lots to receive and discharge vehicles with minimum interference to other traffic and with due regard to the possibility of air raids or sabotage. In the case of very large lots, temporary overpasses may be desirable across the main road to eliminate left turn interferences.
2. Consider advisability of staggering working shifts so that vehicles arrive and leave in controllable small groups.
3. Consider arrangements for parking accommodations at concentration points some distance away, and conveyance of workers by bus, train or foot to final destination.
4. Allow no parking or stopping at the curb in the vicinity of war production plants.

[2] Note Re: Priorities

To purchase any traffic control equipment containing critical materials, it will be necessary to secure a preference rating. Applications for preference ratings can be made in two different ways:

1. In case the request is for a project as a whole (as, for example, for a complete traffic control signal system) inquiry should be made of the State Highway Department concerning the procedure to be followed, which is that specified in General Administrative Memo. #148 issued by the United States Public Roads

Administration on January 10, 1942. This procedure will involve clearance of the application through the State Highway Department, the District Engineer of the Public Roads Administration and its headquarters in Washington before it goes to the War Production Board.

2. If the application for preference rating is to be for individual orders (such as a specified number of signal controllers or, separately, so many feet of signal cable), application may be made on "War Production Form PD-1A," directly to the War Production Board. This form may be secured from the local field office of the Priorities Division of WPB, or from local printers. Under this procedure, applications must be made for each type of material—that is, one application for cable, a separate application for controllers, yet another application for poles. The PD-1A applications may also be submitted through State Highway Departments and the Public Road Administration for their recommendation.

To be approved under either procedure traffic control devices must:

1. Be necessary for the War effort or for public health and safety.
2. Involve use of a minimum amount of critical materials.

PART III. MORE EFFICIENT USE OF PRIVATE AUTOMOBILES

EVERY known method must be effected to conserve private automobiles for critical war transportation. This can best be accomplished by reducing the mileage operated by each vehicle, thus lengthening the life of the vehicles and tires and reducing the consumption of essential gasoline and oil.

Individual conservation will not be adequate. Group conservation *must* be adopted to supplement the more efficient use of mass transportation facilities if maximum utility is to be obtained from our local transport systems.

The "group riding" plan

Group conservation means "group riding," whereby the number of persons carried per trip in each private passenger vehicle is increased. Current figures for war plants indicate that approximately 1 1/3 workers are now being carried in each private passenger vehicle, this must be increased to four or more persons per vehicle to secure the automotive transportation necessary to the war effort. Specifically, group riding is an important obligation of all war production workers who must rely almost exclusively upon private vehicles for transportation to their work. Similarly, the motoring public generally must be encouraged to accept and practice it to the greatest extent possible.

Basicly, group riding is accomplished by getting persons who live in the same general neighborhood and who work in the same plant, or in the same area, to ride back and forth together in a single automoblie rather than separately in several automobiles. By so doing, the several automobiles can be used in rotation. Conservation results by having all vehicles remain idle when not in use for transporting workers. Through "group riding," the total volume of traffic on main routes leading to essential industrial plants, will be reduced, thus tending to increase the effective use of these thoroughfares.

Initiating the plan

At the start, efforts to organize voluntary group riding should be concentrated in individual plants, giving consideration next to group riding by industrial areas. Organization of department stores and offices and neighborhood and suburban groups can come later. Moreover, group riding should follow, not precede, the staggering of working hours since extensive revision of the original plan may be necessary if staggering changes the hours within single riding groups.

To prepare a workable plan, several basic factors must be given thorough consideration. The principle ones involved are indicated in the following questions:

1. What per cent of the employees in any given plant or building are transported by private automobile?
2. What is the average number of workers carried to and from the plant or building per automobile?
3. To what extent are buses, street cars and trains being used and, if necessary, to what additional extent can they be used?
4. Where do the workers live with respect to the plant, with respect to each other and with respect to major streets, highways and transit routes?
5. What nationalities, races, occupations and sexes are involved and in what relative numbers?
6. Should group riding be confined entirely to complete trips from home to the plant or can some of it be developed in conjunction with street car, bus and train service?
7. In what neighborhoods, blocks, etc., can group riding be developed most effectively?

Obtaining basic data

Information for use in developing a group riding plan for specific war production plants, offices, buildings and department stores can best be obtained through an employee questionnaire.

Questionnaire Contents: Data to be obtained from each worker or employee should include the following:

a. Working hours.
b. Residence area, identified by code number related to a map of the region.
c. Means of transportation now used.
d. Probable length of life of tires on motor vehicles, used for commuting.
e. Means of transportation which could be used if private vehicle were not available.

Questionnaires now in use are shown in Forms 3 and 4.[1] These may be modified by the addition of questions having special local application. It should be noted that these questionnaires also furnish basic information for the staggering of working hours. It is desirable that data for the staggered hour program and for the group riding program be collected simultaneously on the same questionnaire to prevent repetition of field studies at a later date.

Distribution, Collection, and Sorting of Questionnaires: Distribution and collection of questionnaires should be handled through the plant foreman in war production plants and through the office of floor supervisors in office buildings and retail stores.

The sorting of completed questionnaires of those using passenger automobiles, either as driver or passenger, is generally done first by residential areas and then by working times. Mechanical sorting machines will be required in all except the simplest instances.

Summarizing Questionnaire Facts: If the number of questionnaires gathered during the study is not too large the residences of workers using passenger automobiles can be shown for each shift by preparing a spot map. Different colored pins or dots can be used to show the residence of workers and to indicate whether driver or passenger; and if a driver, the number of passen-

[1] Questionnaire forms must be accompanied by a map of residential areas, with numbered sections, so that place of residence can be identified by the employee by key number.

WAR TRANSPORTATION CONSERVATION COMMITTEE

I hereby pledge cooperation in the patriotic "Let's Ride Together" Plan to help make my car last longer. To do this I will: Walk, ride a bus, ride with others, share my car when driving, drive as little as possible. I further pledge to care for my car through proper servicing and to drive cautiously to avoid accidents.

Name ..... Badge No. .....

Mailing Address .....

Starting Time ..... A.M. P.M. Quitting Time ..... A.M. P.M.

RESIDENTS IN:

Answer One Only
- A. Pontiac: Residential Section No. .....
  (See Map of Pontiac)
- B. Oakland County: Residential Sec. No. .....
  (See Map of Oakland County)
- C. Others: County ..... City or Village .....

I live ..... miles (one way) from the place where I work.

CHECK ONE

TO GET TO WORK I USUALLY:

Walk ☐ Ride a bus ☐ Ride with someone else ☐

Drive my car with ☐ ☐ ☐ ☐ ☐ ☐ extra passengers. (0 1 2 3 4 5) Swap rides with others ☐

Comments .....

PLEASE FILL OUT COMPLETELY AND RETURN TO YOUR FOREMAN. THANK YOU.

FORM 3

gers, if any, now being carried daily. When thousands of workers are involved, map display is not feasible. In such cases the questionnaire data should be indexed according to residence area, from which residential section tabulations are prepared.

Regardless of what form of summarizing is used for the questionnaires, it is most important that the factual data be broken down into small units so that a direct use can be made of the data for each neighborhood or small area in which workers reside.

Once the questionnaire data are sorted by residence of worker the questionnaires or summary cards should be studied to determine for each section of the route, neighborhood, etc.:

1. Present amount of group riding.
2. Amount of grouping that may be possible.
3. Probable life of tires on the cars being used.
4. Additional amount of mass transportation that could be utilized.
5. Best methods to bring about increased group riding.

FORM 4

LOCKHEED DRIVE CAREFULLY **CONSERVE RUBBER** KEEP 'EM FLYING VEGA

IMPORTANT NOTICE TO ALL EMPLOYEES

By reason of the rubber tire shortage, a serious emergency may soon exist in your transportation to and from the plant. To assist you in solving this problem, your management is distributing these questionnaires in connection with a traffic survey. It is vitally necessary that you answer each of these questions accurately and completely and **RETURN THE QUESTIONNAIRE TO YOUR SUPERVISOR IMMEDIATELY.** (Information on this questionnaire WILL NOT be used for any other purpose than this survey.)

PRINT NAME — LAST NAME: DOE; INITIAL: S.; FIRST NAME: JOHN

CLOCK NUMBER: 80304

NUMBER: 118 C — STREET: South Jackson St.

CITY: Glendale

TELEPHONE NUMBER: Ci. 33955 — DEPARTMENT: 96-92

PLANT — CHECK ✓: 1 ✓ LOCKHEED (MAIN PLANT); 2 LOCKHEED (CITY & SANTA FE); 3 LOCKHEED (PLANT THREE); 4 LOCKHEED (E. OF BURBANK); 5 VEGA (AIRCR. AIR TERM.); 6 VEGA (SAN FERNAN RD.); 7 OTHER

SHIFT — CHECK ✓: 1 7:00 A.M. – 3:30 P.M. (1st SHIFT); 2 4:00 P.M. – 12:30 A.M. (2nd SHIFT); 3 12:30 A.M. – 7:00 A.M. (GRAVEYARD); 4 8:00 A.M. – 4:45 P.M. (OFFICE); 5 ✓ OTHER (WRITE TIME BELOW)

TIME START ✓: 7:30 AM ✓ — TIME QUIT ✓: 5:15 PM ✓

IMPORTANT INSTRUCTIONS: Accompanying this questionnaire, you will find a map of the Los Angeles area. This map is divided into sections. Determine the number of the section in which your residence is located, and write the number in the space provided. For example, for section 23-A write "23" and check box "A". It is not necessary to find your exact location, merely the number of the section in which your residence is located. If this map does not show the area in which you live, write "X" in the space provided. If you have any questions, ask your supervisor. PLEASE BE POSITIVE THIS INFORMATION IS ACCURATE!

SECTION NUMBER — WRITE YOUR SECTION NO.: 5 — CHECK ✓ YOUR SECTION: A ✓, B, C, D

A. HOW DO YOU TRAVEL BACK AND FORTH TO WORK?

1. Please "✓" the ones you use regularly:

1 ✓	PRIVATE AUTO	3 ✓	BUS	5	MOTOR SCOOTER	7	WALK
2	STREET CAR	4	MOTOR-CYCLE	6	BICYCLE		

2. The distance from my residence to work is 7 MILES.
3. It takes about 55 MINUTES to travel from home to the plant and about 55 MINUTES from the plant to home. (Method Used Most Frequently)

(Write minutes, not hours. For example, for 1 hour and 10 minutes, write "70 minutes.")

B. IF YOU RIDE A STREET CAR OR BUS, ANSWER THESE:

1. How many days a week do you ride the street car (or bus) TO WORK? 4 FROM WORK? 4
2. Where do you first board street car or bus when coming to work? Broadway and Brand (INTERSECTION OR STREET)
3. On a one-way trip, how many times do you have to transfer from one bus or street car to another? 1
4. What is the total street car-bus fare for a trip from your home to the plant? 15¢

OVER

DRIVE CAREFULLY **CONSERVE RUBBER** KEEP 'EM FLYING

C. IF YOU USE A PRIVATE AUTOMOBILE, ANSWER THESE:

(If more than one of the following applies to you, be sure to answer each one.)

1. Do you drive, and keep your car at the plant during your shift? Yes ✓ No ____ If yes, how many times a week? 1
2. Are you brought to work and picked up by your wife or other member of your family? (Car not at plant during shift.) Yes ____ No ✓ If yes, how many times a week TO WORK? ____ FROM WORK? ____
3. Do you ride as a passenger in someone else's car? Yes ✓ No ____ If yes, how many times a week TO WORK? 1 FROM WORK? 1

PLEASE NOTE!

D. If you answered "YES" to number 1 or 2 in group C above, ANSWER THE QUESTIONS BELOW. If you answered them both "NO" you may skip this section.

1. How many passengers will your car carry, in addition to the driver? 4
2. Do you carry other employees regularly? Yes ____ No ✓ If "yes" - How many TO WORK? ____ How many FROM WORK? ____
3. Where do you park your car?

1 ✓	COMPANY OWNED LOT	2	PRIVATE PARKING LOT	3	ELSEWHERE (ON STREET, ETC.)

4. In the boxes below, write the number of MONTHS since you purchased your tires. If you have had them retreaded or recapped, show the number of MONTHS since this was done, instead of months since purchase.

LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	SPARE
3	3	18	18	18

(Write NUMBER of Months.)

BE SURE YOU HAVE ANSWERED **ALL** THE QUESTIONS.

WHEN COMPLETED

HAND THIS TO YOUR SUPERVISOR IMMEDIATELY

LOCKHEED-VEGA MARKET RESEARCH DIVISION
BURBANK, CALIFORNIA

Applying questionnaire and basic facts

Increasing the group riding in any given district depends largely on how successful one is in getting workers together to make the necessary arrangements. To do this, the first step should be to record and publish all essential details concerning the potential group-riding possibilities for each block, residential area or neighborhood. These data are taken from the spot map or worker-residence tabulation described above and should be printed and posted in the plant to facilitate any voluntary arrangements for grouping.

Various means should be used thereafter to bring all workers together so that they can work out the most satisfactory grouping arrangement. Several such devices may be employed. There is no single one which will, immediately, accomplish the desired results. Each should effect some increase in the average number of passengers per automobile arriving at plants until enough devices have been employed to reach the desired level of not less than 4 passengers per automobile.

The responsibility for effecting the highest practicable load per car rests jointly on management and labor. Through cooperative publicity, workers may be called together in the various plants in meetings jointly supervised by a representative of the company and a representative of labor, at which all the data from the questionnaire cards are available in readily usable tabular form. Preliminary suggestions for group arrangements may be prepared by representatives of the company and labor to facilitate the formation of groups. A man, however, tentatively assigned to a particular group may desire to join some other group and in this case a transfer is made. After all possible combinations have been explored the workers should agree to adopt the plan.

After these plant groupings have been arranged on an area basis, there may be a number of employees who cannot be fitted satisfactorily into groups. In that event the individuals remaining from several groups should be combined and analyzed on a route basis.

Another method, particularly suitable in neighborhoods where a large number of employees reside, is to meet in the evening in the neighborhood and proceed with the same type of meeting. In some cases a neighborhood store manager may agree to act as a clearing house for the continuing arrangement of new groups. If this particular area draws from a large region, parking areas may be established to which workers will drive from outside the area, joining their groups at the neighborhood parking lot.

In many areas, plants are served by mass transportation lines which do not lead into all of the tributary residential areas. In such instances workers should be encouraged to ride in groups to the nearest transportation line where adequate service is available and there transfer to mass transportation to avoid unnecessary use of their cars. If the numbers of employees involved are large enough, consideration should be given to the establishment of parking lots in the vicinity of such transportation lines.

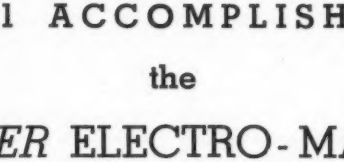
In all of these arrangements it is essential that an employee's automobile when not in use for group riding, should not be used by someone else for non-essential trips. This is a responsibility of the individual owner and he must be convinced of the fact that the effectiveness of the plan will be lessened greatly unless all unessential use of his car is eliminated completely.

To be most successful group riding must be on a permanent and established basis. The individual whose

"A 1941 ACCOMPLISHMENT"

the

≡ *SUPER* ELECTRO-MATIC ≡



INTEGRATED TRAFFIC CONTROL

- *DENSITY-ACTUATED*
- *SELF-COORDINATING*
- *TRAFFIC-ADJUSTED VEHICLE INTERVAL*
- *TRAFFIC-ADJUSTED INITIAL INTERVAL*

"Traffic Regulation with Intelligence"

AUTOMATIC SIGNAL CORPORATION

Norwalk, Conn. Chicago, Ill.

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responsibility it is to provide transportation on a particular day or in a certain week must meet the others in his group at the predetermined places and predetermined times without fail. If, because of sickness or other reason, an employee who is to drive is not able to go to the plant on any day he must arrange with someone else in the group to substitute for him.

In addition to the means above described tending to build up riding groups, various incentives may be established. In certain cases the company's parking lot may be opened only to those cars carrying three or more occupants. Another suggestion is that the plant parking lot be divided into sections, the most desirable location being allotted to those who arrive with a full car; the other locations becoming progressively less desirable as the number of occupants decreases until those who drive alone must park furthest from the plant.

Windshield stickers identifying the owners as members of this plan may be used with special indications issued to those who are coming with 3, 4 or 5 persons. Membership cards, lapel buttons, and all forms of publicity by newspaper, radio and other means must be employed to keep the necessity for group riding continually in the minds of all concerned.

Checking results

It is essential that the results of group riding be continually checked to assure that there is no relaxation in its observance. For this purpose checks of the number of automobiles and passengers arriving in plant parking lots prior to the establishment of group riding should be made, with periodic checks thereafter. In this way the trend of passenger loads can be followed closely, making it possible to ascertain rather exactly which of the measures for creating voluntary acceptance of the plan are most successful.

Although basically sound in principle, group riding plans cannot be put into effect except through an energetic campaign. Group riding is subject to many adverse pressures growing out of our inherent individualistic natures and our desire to conduct ourselves according to our own dictates, not subject to the wishes of others. However, the urgent necessity of group riding in order to conserve our rapidly diminishing rubber stockpile is so strong that, unless voluntary means are used to bring it about, strict and arbitrary regulation may eventually be found necessary. To avoid being compelled to do something which we know must be done, it is far preferable to proceed on a voluntary basis in a manner most satisfactory to the various individuals than to await compulsion which cannot leave as much freedom for the individual as he would have if he had participated on a voluntary basis.

CONSERVE

Manpower — Man-hours — Machines

for

VICTORY

Traficounter
BACKBONE OF HIGHWAY PLANNING
PRINTED RECORD EVERY 15 MINUTES
COUNTER RESETS TO ZERO Hourly
Super-speed CAPACITY FOR COUNTING HEAVY TRAFFIC FLOW
HIGHWAY TESTED AND PROVED
Sample of printed tape ½ actual size
WRITE FOR "900 CARS PER MINUTE" BULLETIN
STREETER-AMET CO., 4101 RAVENSWOOD AVE., CHICAGO
SPEED
ACCURACY
STREETER-AMET COMPANY

CORRECTION

Hon. Joseph B. Eastman is the Director of the Office of Defense Transportation in the Office of Emergency Management. It was erroneously reported in the March issue of TRAFFIC ENGINEERING, that Mr. Eastman was appointed to the War Production Board, another division of the Office of Emergency Management.

GROUP-FINANCED AUTOMOBILE CONSERVATION

The cessation of automobile production, the rationing of gasoline and the loss of 98 per cent of our former crude rubber sources has produced an emergency.

War workers living away from mass transportation lines and the location of war production plants without regard for mass carrier systems have made the automobile a critical link in the assembly line of War Production.

Many war industry parking areas and their access roads are today suffering from acute traffic congestion which is taking its toll in lost man-hours and causing lost man-power and machines through generated traffic accidents.

The following is an outline of one method of obtaining the maximum of efficiency from existing passenger vehicles so vital to war production.

Sedan automobiles, station wagons, or refitted trucks, could be financed along group lines in a manner similar to which airplanes have been purchased by aviation clubs. Thus the ownership of one car would rest with twelve to eighteen persons who need not necessarily all be licensed drivers. The vehicles would make two or three trips a day from the same residential area. The overlapping of the shifts would fit nicely into continual service of the cars, and they would thus be parked away from the defense areas. Contacts exist with the finance companies and

PROTECT THOSE WHO PROTECT U. S.

It is important to keep the man driving who is "helping to keep 'em flying". Three shifts around the clock means night driving on primary and secondary roads for many defense workers. Now, when every minute counts, it is important that there is no break in the production flow due to accidents.

Traffic engineers today therefore face greater problems which must be solved with smaller operating personnel.

Use rust-resisting steel FIREBALL signs and signals to solve your safety problems. Send for complete catalogue.

"Fireball"
REFLECTING BUTTONS, SIGNS & SIGNALS
MANUFACTURED BY
THE NATIONAL COLORTYPE CO., INC.
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BEST FOR STRENGTH
BEST FOR VISIBILITY
BEST FOR LOW COST

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U. S. Spring & Bumper Co., Los Angeles, Cal.
Western Distributors and Mfrs.

the automobile dealers, who are also garage owners, and service can be had in all residential areas. Experienced men are available from this group to supervise the use of the car and all gas, oil, repairs, and tires would be furnished by a designated dealer. Twelve or eighteen men or women subscribing to this group plan who agree to a $2.00 weekly pay deduction for example, would make available approximately $1,900 a year.

Some of the benefits of this plan over other plans for joint use of automobiles are as follows:

Cars would be parked away from plants.

One automobile instead of three would be used for a three shift industry.

Street and parking lot congestion would be at a minimum and mass carrier schedules could be speeded up.

Full control of rubber rationed for war workers could be achieved.

Priorities could be obtained for these cars since supervision would be incurred.

Government finances through the R.F.C. could probably be obtained.

The plan would be an outlet for established automobile dealers.

The government has already recognized the value of similar plans and has underwritten the contracts to insure against loss by the operating companies. A rebate clause could be inserted in the sales contract as an incentive to the members of the group

TRAFFIC COUNTING SIMPLIFIED WITH NEW TRAFFIC COUNT DENOMINATOR

Illustration of 3 unit Counter, classifying directions of travel

Other models with from 1 to 12 classified counting units mounted in horizontal line.

By simply pressing key one count is recorded in classified counting unit controlled by that key. •

Touch method employed permitting operator to keep eyes on road at all times. •

Quick reset returns all counting units to zero. •

Counting units may be classified to represent direction of travel, different types of vehicles, state license plates, and other important classifications in traffic planning. •

Now in use by City, County and State Highway Departments throughout the U.S.A. •

Quick . . . Accurate . . . Efficient.

— WRITE FOR CATALOGUE —

THE DENOMINATOR CO., Inc. - 261 Broadway, N. Y. City

to achieve a successful operation of their unit. Experience with small groups is now essential to formulate large scale operations which will probably be needed in the future.

A digest of a Plan for Vehicle Conservation by John R. Nelson and Edward M. Joyce of the Motor Vehicle Section of the Shawmut National Bank of Boston, Massachusetts.

LOOKING FORWARD

May 6, 1942—I.T.E. Midwest Safety Conference, Sherman Hotel, Chicago, Ill.

June 15 to 26, 1942—National Institute for Traffic Training, Yale University, New Haven, Conn.

DO YOU KNOW?

Henderson Gilbert of the Harrisburg Railways estimates that it takes 2.7 times as much gasoline per passenger mile when a person rides in his own automobile as when he takes a bus.

Since tire rationing morning rush hour transportation travel has increased 11 per cent in Washington.

Mayor Lausche of Cleveland sent a letter to 10,000 downtown office managers urging cooperation in furnishing information for use as a basis for a staggered hours system.

In some sections where unprecedented industrial growth has occurred and where existing transportation facilities were just enough to meet normal conditions, it has been contemplated restricting shoppers to certain hours.

Most transit companies have enough vehicles to move all who need to travel if they all do not try at once. Half of their vehicles are idle more than half of the time.

G-E REMOTE CYCLE CHANGE TRAFFIC TIMERS Are Getting America's Manpower To Work On Time

IF WORKERS don't get to their jobs on time, it's human to blame congested streets. But chances are, part of the trouble is inadequate traffic control. If traffic-jammed streets in your city have resulted in demands to "do something," consider what General Electric remote-cycle-change traffic controllers can do.

Here's how they work. During the normal part of the day, they operate the signals conventionally to move traffic with smooth progressive flow in both directions. But when traffic becomes heavier, of course vehicles can not move at the speed for which the system is set, and traffic jams up at every intersection. Therefore the system must be slowed down. And that's exactly what the master DR timer does. By increasing the cycle length, it decreases the system speed.

During peak-traffic hours it is possible with DR timers to move at least twice the number of vehicles by cutting the system speed from 20 to 15 miles per hour. Often, cities report an increase in capacity equivalent to another traffic lane.

In interconnected systems, installing remote cycle change is simple. Attachments can be made to most existing intersection controllers or included in the new Type D controllers. The master timer—with either manual control or time-switch control with week-end feature—can be installed in any central location.

Why not investigate now the remarkable possibilities of remote cycle change? Our nearest office will put you in touch with a G-E traffic-control specialist who will be glad to tell you if Type DR controllers are the economical solution of *your* traffic problem. *General Electric, Schenectady, N. Y.*

General Electric and its employees are proud of the Navy award of Excellence made to its Erie Works for the manufacture of naval ordnance.

GENERAL ELECTRIC